MOVEMENTS OF THE BEVERLY HERD OF BARREN-GROUND CARIBOU, OCTOBER-DECEMBER, 1982

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CANADIAN WILDLIFE SERVICE

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SUMMARY

In October 1982, the Beverly Herd entered the winter range on its eastern flank in the Damant, Firedrake, and Wholdaia lakes region. Caribou at the front of the movement had reached Spearfish Lake by October 19 and were travelling west. The westerly movement stopped in the vicinity of the eastern half of a large 1969 burn west of Delight Lake. Caribou spread to the south and particularly to the northwest during the rut in late October. By November 23, the momentum of the movement had increased and the majority of the herd was travelling northwest, with the forerunners in the Tejean and Gray lakes region. On 2 December, the caribou in the northern portions of the range were travelling northeast and the head of the movement was on the edge of the tundra east of Tent, Eileen, Brooks, and Penylan lakes. Smaller numbers of caribou in the south were travelling south and southeast into Saskatchewan on a line from Brazen Lake to near Selwyn Lake.

Caribou freely travelled through small- and medium-sized burns during October and November. However, all but a few of them remained east of a line which divides the winter range into extensively burned and relatively lightly burned regions in the N.W.T.

INTRODUCTION

A study of the effects of fires on the Beverly Herd of barren-ground caribou (Rangifer tarandus groenlandicus) began in the winter of 1982-83. One component is an examination of the physical state of caribou in the herd at the beginning and end of the winter period. The

results of a sampling of 75 caribou in November 1982 is the subject of a separate report. A second major component is an attempt to assess the effects of burns on the winter movements and distributions of the Beverly Herd over a 3-year period from 1982-83 to 1984-85. This brief report provides information on some observed movements of the Beverly Herd from October to December 1982. It is produced simply to inform interested agencies, organizations, and individuals of caribou movement patterns.

METHODS

Aerial reconnaissance surveys of parts of the winter range were conducted on 19 and 22 October, 5, 8, 9, 23, and 24 November and 2 December (Table 1). Observations were made from a Cessna 185 at about 152 m (500 feet) above ground level. Particular attention was placed on how caribou responded to burns. Maps (1:250,000) showing the distributions of burns were used for navigation and observations of caribou and their trails were recorded directly onto those maps.

RESULTS

1. Distributions and Movements

1.1 October 19 and 22

Caribou were entering the winter range between Damant and Wholdaia lakes on a west, southwesterly course. The leaders had reached the Spearfish and Esk lakes region at about 108°W longitude (Fig. 1). The southern boundary of the movement was 60°30' North. The largest groups were observed between Sandy and Rennie lakes. Tracks and trails were clearly visible in the 2 inches of snow that blanketed the entire winter

Table 1. A list of aerial surveys conducted in from October 19 to December 2, 1982, in order to observe distributions and movements of the Beverly Herd.

Date	Hours flown	Location
19 October	7.0	N.W.T. north of 60°30'; west of 104°30'
22 October	6.5	N.W.T. north of 60°30', west of 103°30'
5 November	4.8	N.W.T., Porter, Penylan, Alcantara L. region
8 November	5.5	N.W.T. - Sask. west of 107°
9 November	2.8	N.W.T. - Sask. west of 107°
23 November	5.2	N.W.T. north of 60°; west of 106°30'
24 November	1.8	N.W.T., Nonacho and Porter L. region
2 December	7.4	N.W.T. north of 60°; west of 105°

range in the N.W.T. The large lakes were still open, which caused the caribou to travel around them. A few bands of caribou were diverted around the north end of Rennie Lake and the forerunners of that movement remained north of the Taltson River. Only a small number of caribou had travelled down the east side of Wholdaia Lake since the snowfall on October 15 and 16. There was one report of a few caribou being killed in the Selwyn Lake region in the week before our survey.

Even although snow cover was light and had largely melted by the 22 of October, the caribou tended to travel on the trails made by the forerunners. Heavy trails were observed throughout the central portion of the distribution. Most of the caribou were moving briskly and all but a few tracks and trails deviated from the westerly direction of the

migration. Only a few groups were resting when sighted. Ice on small lakes was strong enough to support the caribou but generally they were travelling in the forest. The groups were well mixed and adult males occurred in all the larger ones.

1.2 November 5, 8 and 9

Observations were confined largely to the region of the large burns between 60 and 61°N latitude and 107° and 109°W longitude. Caribou were seen as far west as 108°45'West and they were on a wide front from the Saskatchewan-N.W.T. border in the Brazan Lake region to Alcantara Lake (Fig. 2). Thus, the movement to the west observed on 19-22 October had stalled and the caribou had spread out to the north and south to cover a large area. Caribou and their trails were observed on the eastern half of the 1456 km^2 (562 mi^2) 1979 burn located west of Delight Lake (Fig. 2). No caribou or their sign was observed on a line from Sparks Lake through Halliday, Porter, and Penylan lakes. However, observations by Frank Miller and Anne Gunn (pers. comm.) in early November indicated that many caribou were located in the region between Alcantara and Porter lakes. When last seen on 16 November the leaders were travelling to the east between Porter and Manchester lakes.

1.3 November 23 and 24

On November 23, caribou occupied a large region from Whirlwind, Delight, Alcantara, Halliday, and Gray lakes, on the west side of the distribution, to beyond Ivanhoe, Labyrinth, McCann, Manchester, and Porter lakes on the east side (Fig. 3). Movement was southeast to southwest in the N.W.T. within 64 km (40 miles) of the Saskatchewan-N.W.T.

border and generally northwest elsewhere (dashed arrows in Fig. 3). The leaders were on a front from Halliday Lake to just north of Gray Lake. In the Gray and Porter lakes region, the direction of movement was north and northwest. Many large groups (up to 200 in a group) occurred near the front of the movement; elsewhere most of the groups contained 4-15 individuals. The herd was splitting into two groups at this time, which would soon result in a void in the Abitau, Spearfish, Ivanhoe and Labyrinth lakes region. The relative numbers of caribou in the surveyed region on November 23 is indicated in Figure 4 by totals within brackets.

1.4 December 2

Direction of movement was generally northeasterly (solid arrows in Fig. 3) except along the barrens and in the south where the direction of movement was to the south-east and south. The caribou on the barrens were travelling in various directions and seemed reluctant to proceed further out onto the tundra. Caribou just northwest of Rennie Lake were travelling northwest. A few caribou already had entered Saskatchewan in the Scott and Dunvegan lakes region. Relative numbers of caribou observed along segments of the flight path is indicated in Figure 4 as numbers beside lines.

2. Movements in Relation to Burns

Only a few small burns were encountered by caribou as they entered the winter range in mid-October. No change in the direction of movement was indicated by the trails when the caribou encountered those burns. When the caribou reached the large (1456 km^2 = 562 mi^2) 1979 burn

west of Delight Lake, some of them penetrated up to half the width of the burn and then turned to the north and south. The main movement bypassed the burn by travelling northwest through the Alcantara Lake region. It is difficult to judge what effect the caribou at the front of the movement had on the rest of the herd when they encountered the large burn. We just do not know how caribou herds maintain their distributional integrity. Most puzzling is how, on a given day, caribou in widely different regions can all maintain the same direction of movement. Several days later they are all maintaining some other direction. Smell and sight (trails) are obviously important factors for those following other caribou but that does not explain how the caribou at the front of the movement are navigating or what is causing them to move in a certain direction.

The front of the movement spread over a wide area from the Saskatchewan border to Porter Lake during the last 2 weeks of October. Obviously, travel slowed and the caribou dispersed during the rut. In early November, caribou were still entering the winter range in the Sandy Lake region (Frank Miller, pers. comm.). The large 1979 burn east of Delight Lake and other large burns to the south dated 1970, 1979, and 1980 (Fig. 5) may have prevented the movement from spreading to the west in that region. The distribution of caribou in that area changed little during November. Few caribou and their trails were noted in the burns on November 23 compared with November 8. The caribou were moving little in that area on November 23 and few of them were entering the burns. A few caribou had progressed as far west as Whirlwind Lake and 16 km (10 miles)

east of the north end of Hill Island Lake. Relatively few caribou had entered or remained west of a line joining the eastern edges of the series of large burns extending 19 km (12 miles) west of Dunvegan Lake, through Delight, Halliday, and Louison lakes. The region to the west of that line is extensively burned; the region to the east lightly burned.

On November 23 and 24, we checked the effects of several burns in the Porter Lake region on movement patterns. There was a definite northwesterly flow of caribou in the Gray and Tejean lakes region on November 23. The next day, caribou at the head of the movement were in and passing through the west end of the burn south of the Taltson River and the one north of Gray Lake (Fig. 6). On November 23 and 24, caribou were passing through the 1966 and 1980 burns north of Porter Lake and the 1982 burn ("Portergate") east of that lake (Fig. 7). On December 2, caribou and their trails were observed in the 1980 burn along the Taltson River in the vicinity of 107°15'West (Fig. 7).

We did a ground inspection of tracks and trails through the burns at the north end of Porter Lake on December 1. Trails and tracks were extensive in the 1966, 1980, and 1982 burns. Direction of movement was predominantly north and northeast. No feeding craters were observed in the 1966 and 1982 burns but some feeding on shrubs, largely on dead leaves, had occurred in the 1980 burn. On the peninsula where the 1982 burn was started, tracks and trails were as numerous as in the adjacent unburned forest.

The overall impression from the aerial and ground inspections was that caribou did not hesitate to travel through the burns. However, once in them the trails came together to form "heavy" trails on which the caribou quickly passed through a burn.

3. Weather conditions

The second half of October was mild and the 5 cm (2") of snow which fell on October 15 and 16 largely disappeared on November 22nd. November was colder than average but snowfall was light. Snow depths at Porter Lake averaged 15 cm (6") on 23 November and 27 cm (11") on 1 December.

DISCUSSION

From early October to early December, the Beverly Herd had travelled through most of its' winter range in the N.W.T. with the exception of the westerly portions of the range. The path covered by the forefront of the major movement (cows, calves and young bulls) is represented in Figure 8. The movement slowed during the rut, which peaked during the last week of October (Frank Miller, pers. comm.). It regained momentum by the last week of November, when the caribou at the front of the main movement were on the edge of the tundra.

All but a small proportion of the caribou remained in that part of the winter range that is relatively lightly burned compared with that west of a line joining the eastern borders of the four large 1969 burns in the vicinity of Halliday, Powder, Delight, and Brazen lakes. The burn rate in the last 30 years has also been high north of a line from Louison

Lake (16 km east of Nonacho Lake) to the south end of Penylan Lake. Many of the older (pre 1967) burns in that region are not mapped.

That portion of the winter range in the N.W.T. that was utilized in the autumn of 1982 includes most of the present core of the winter range in the N.W.T. The core may be defined as portions of the winter range that is used by more than a few caribou in most winters, say three out of four. Our interpretation of the core of the winter range must be a subjective evaluation because we do not have sufficient data on distributions and movements from October to April. The surveys at one or two periods during the winter only give us distributions at that time, and they should not be interpreted as valid for the entire winter.

In 1958, the western boundary of the core of the winter range would have been drawn approximately through Thubin, Lady Grey, and Hill Island lakes, and to Camsell Portage. The conclusion is that the core of the winter range has decreased in area because of the high fire rate in the western portion of it in the last 30 years and particularly since 1969. A line showing the extent of known winter range of the Beverly Herd would include a much larger area.

The effect of large burns on movement patterns will be monitored during three winters. We need more case histories to determine if large burns, such as the one west of Delight Lake, can stop a movement. Preliminary observations suggest that caribou spend little time in individual burns or in regions that are extensively burned.

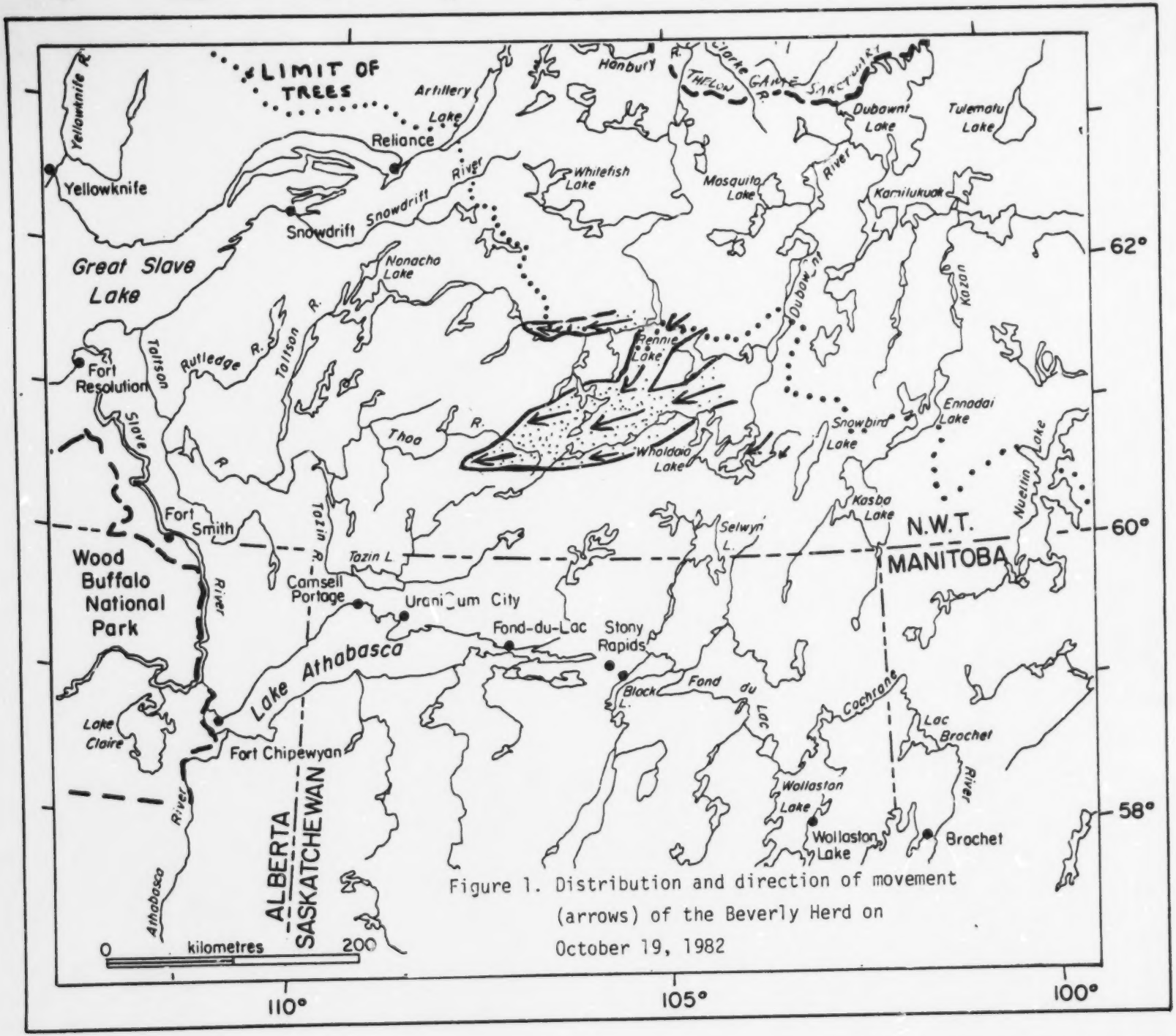

Figure 1. Distribution and direction of movement (arrows) of the Beverly Herd on October 19, 1982

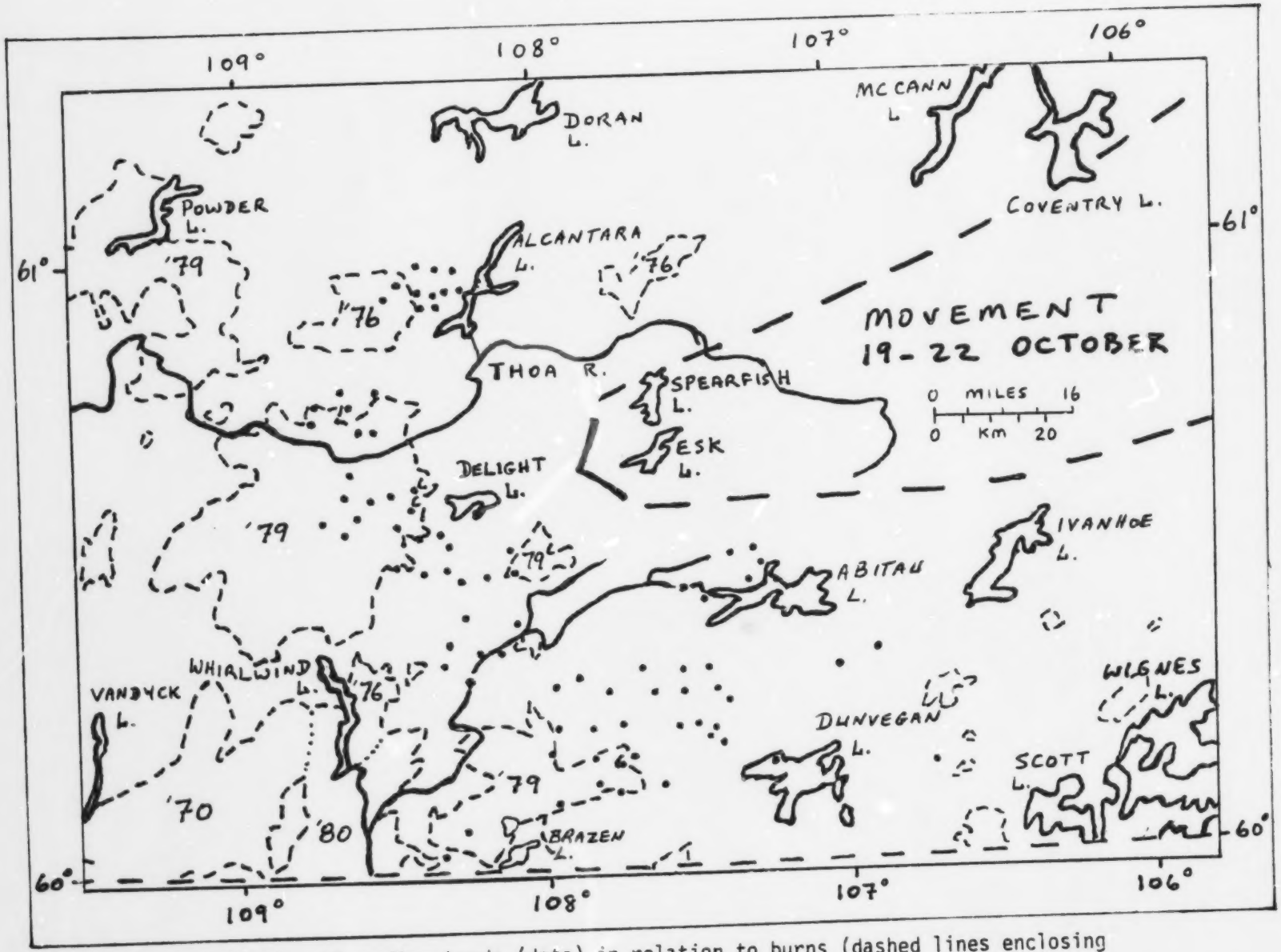

Figure 2. Distribution of caribou bands (dots) in relation to burns (dashed lines enclosing year of burn) from observations 8 November, 1982.

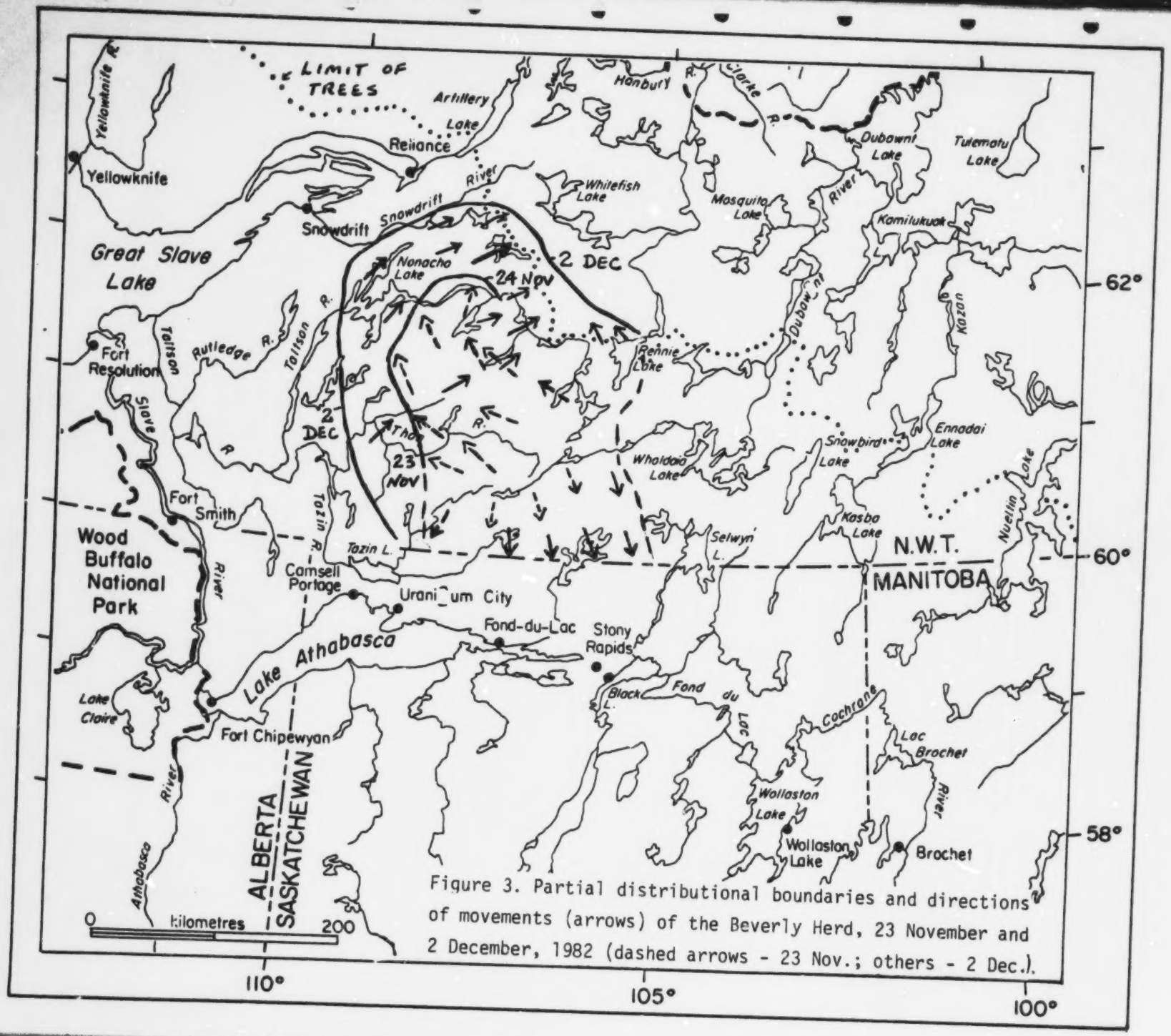

Figure 3. Partial distributional boundaries and directions of movements (arrows) of the Beverly Herd, 23 November and 2 December, 1982 (dashed arrows - 23 Nov.; others - 2 Dec.).

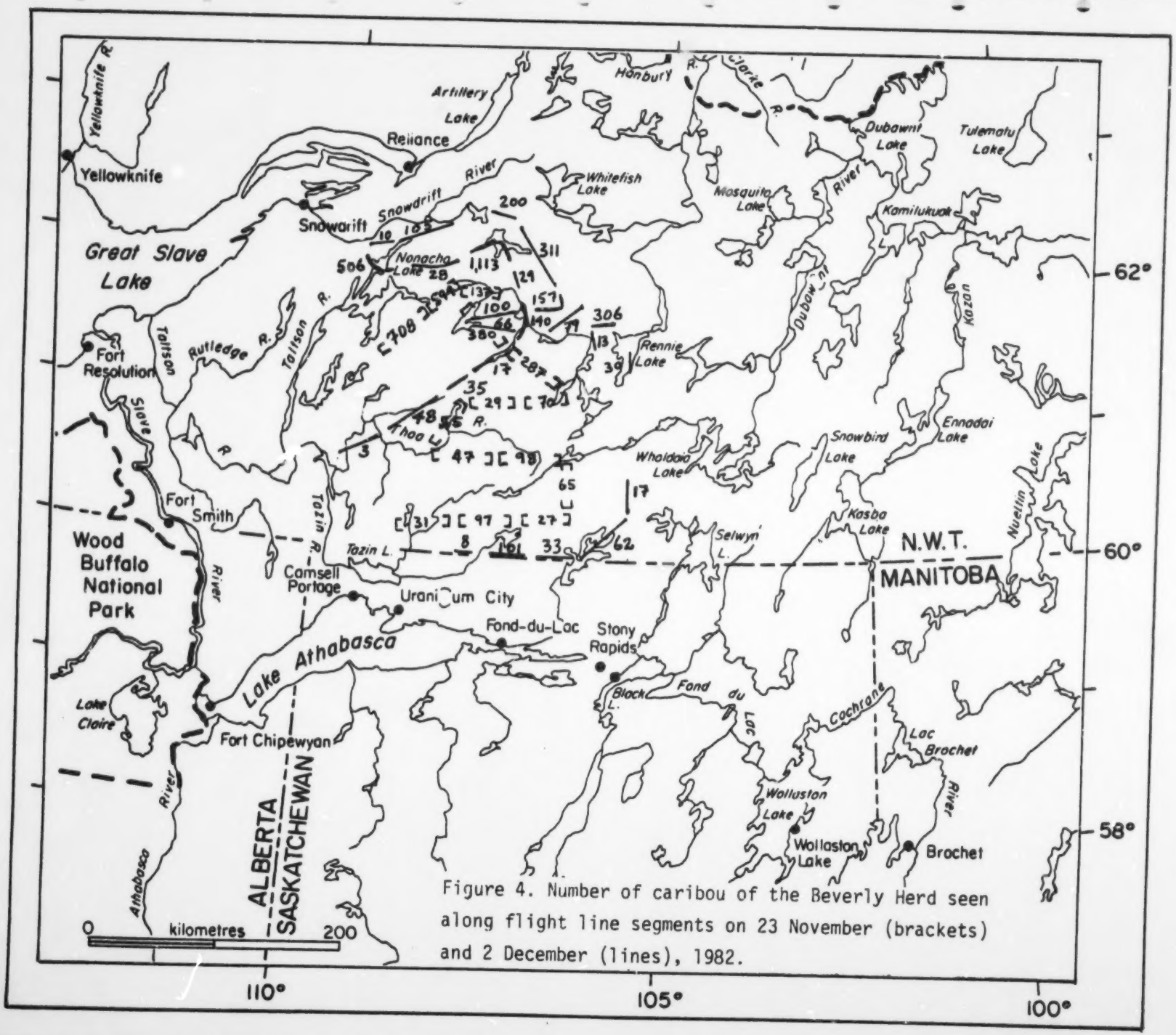

Figure 4. Number of caribou of the Beverly Herd seen along flight line segments on 23 November (brackets) and 2 December (lines), 1982.

Figure 5. Movement pattern of the Beverly Herd on 23 November (dashed arrows) and 2 December (solid arrows) in relation to burns (lines enclosing year).

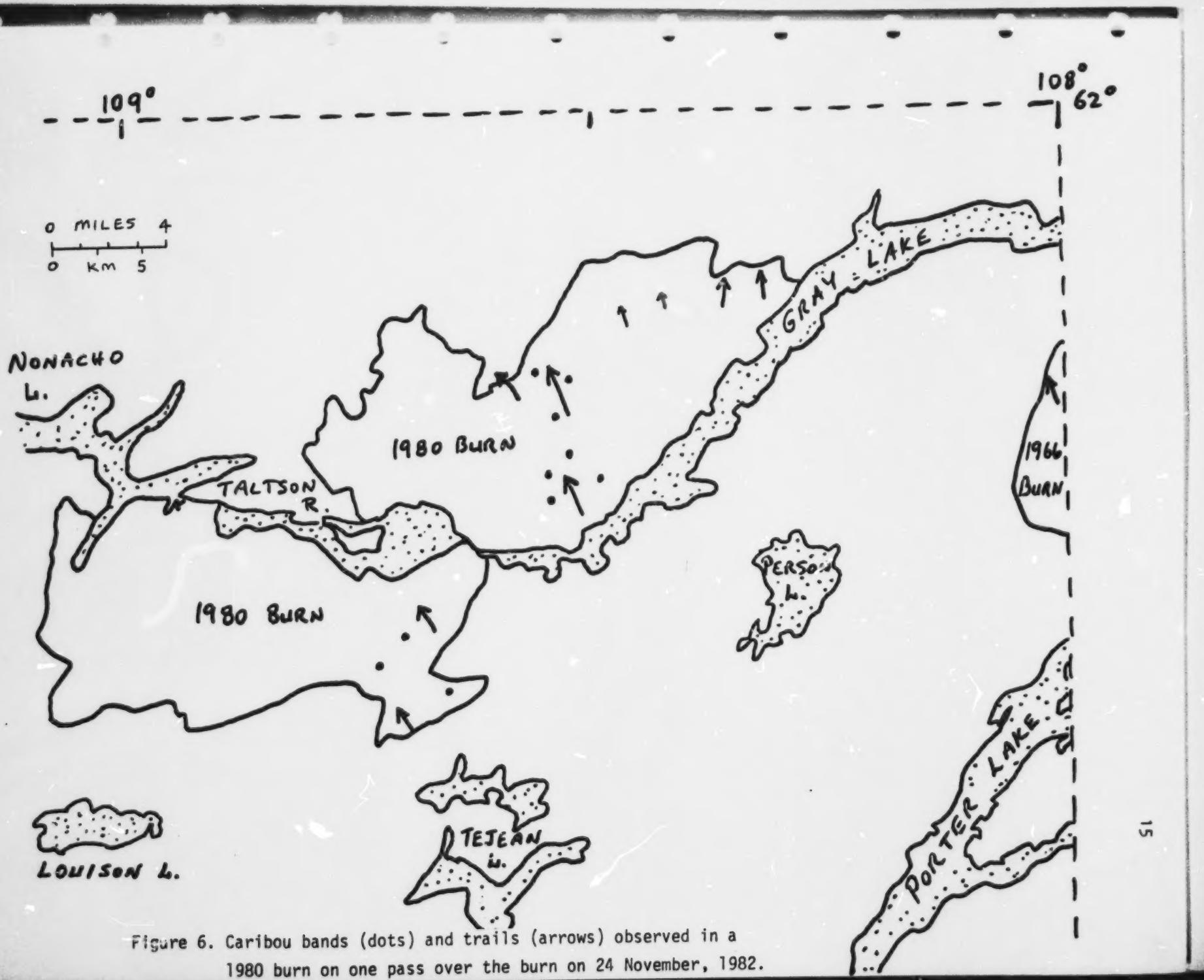

Figure 6. Caribou bands (dots) and trails (arrows) observed in a 1980 burn on one pass over the burn on 24 November, 1982.

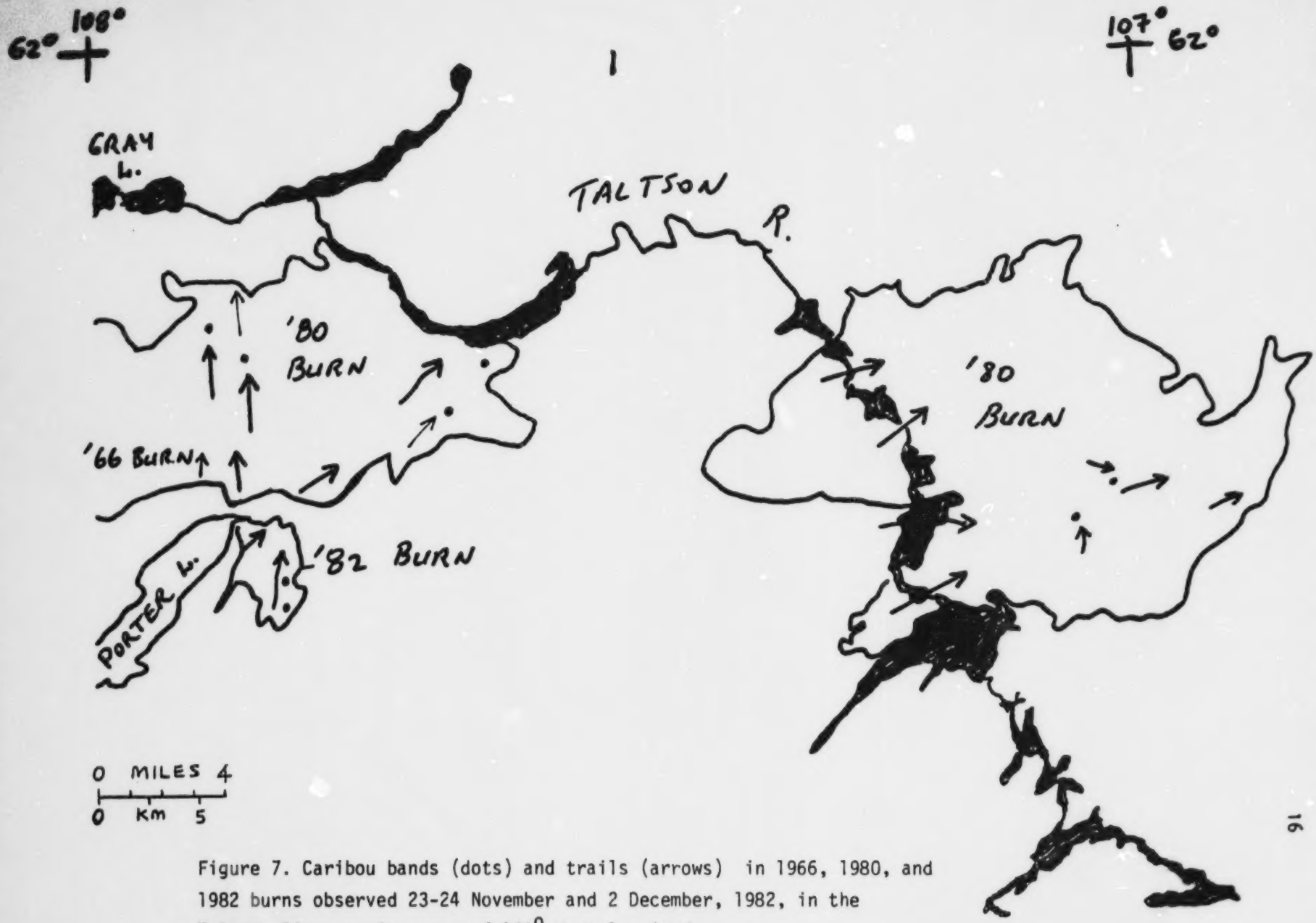

Figure 7. Caribou bands (dots) and trails (arrows) in 1966, 1980, and 1982 burns observed 23-24 November and 2 December, 1982, in the Taltson River region east of 108° West longitude.

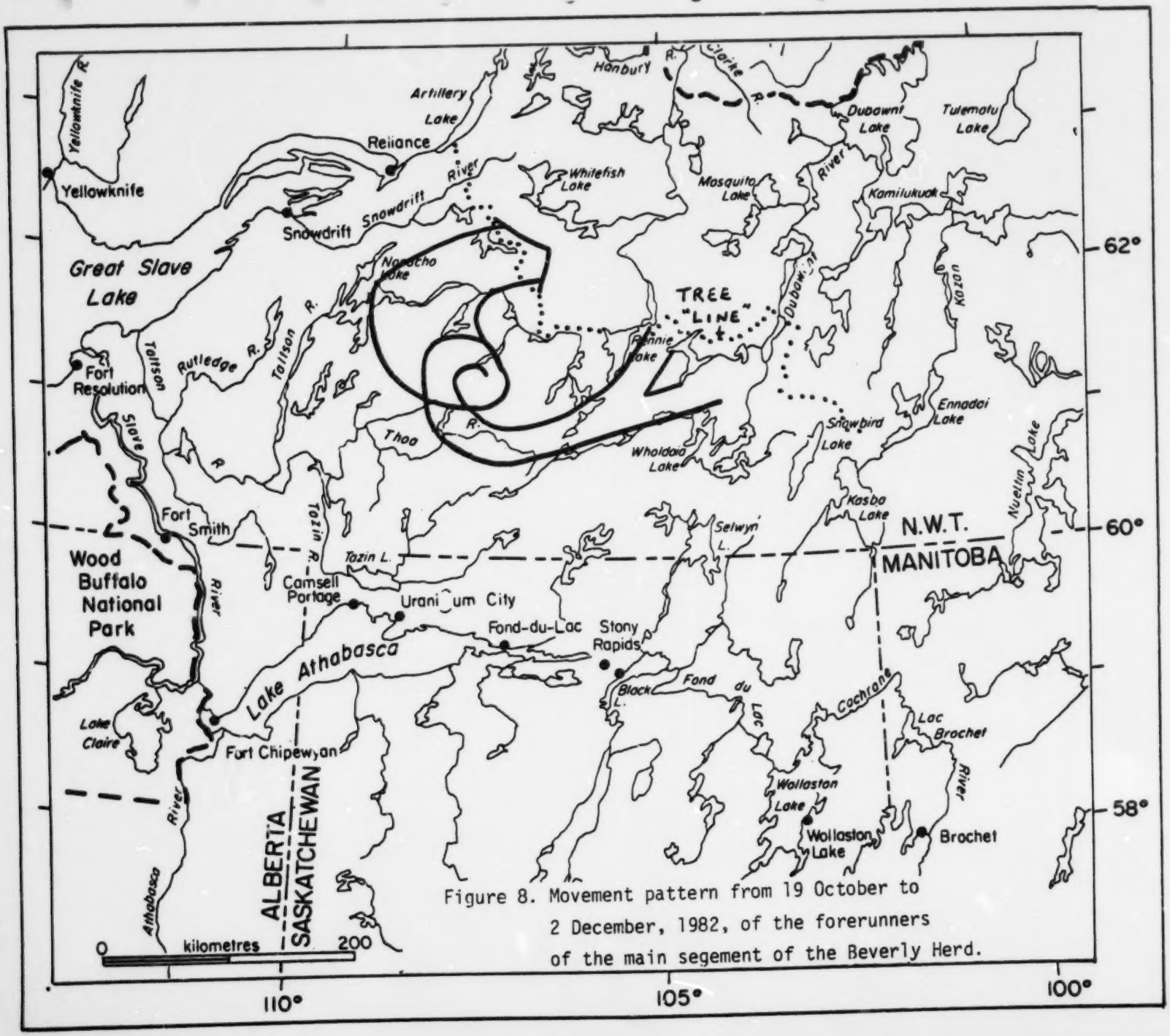

Figure 8. Movement pattern from 19 October to 2 December, 1982, of the forerunners of the main segement of the Beverly Herd.